ASTRONAUTICS

Mice Relay Heartbeats

FIVE TINY black mice electronically relayed their heartbeats and other vital body data to listening scientists via "saddles" sewn on their backs.

The "saddles" are actually miniature radio transmitters. They are designed to allow scientists on the ground to keep track of the animals' heartbeats and respiratory rates during space flight, James Dickey, electronics engineer at Brooks Air Force Base, Texas, told SCIENCE SERVICE.

Similar transmitters were worn by mice who rode into space in a recent Air Force shot. The five mice on display were exhibited at the Air Force Association's 1959 Convention and Aerospace Panorama at Miami, Fla.

Eight or nine other black mice wearing the "saddles" were also displayed recently in a similar exhibit in Yugoslavia, Mr. Dickey said.

The little transmitters fit like saddles on the backs of the mice. They are sewn into the skin on each side of the mouse with wire sutures. Each transmitter holds a button-sized mercury-filled battery that will last for three days. Purpose of attaching the complete unit to the animals' backs is to give the rodents freedom of movement. Since mice die when restrained, they cannot be wired and tied down as can monkeys.

The heartbeat of a mouse sounds like the putt-putt of a motor-boat over a radio. From a space vehicle, however, the heartbeat will be recorded on earth not as sound, but as a line on a graph.

Each mouse is no more than three and one-half inches long, weighing 20 grams. The saddles each weigh five grams, Mr. Dickey said. The mice appear to enjoy chewing each other's transmitters, so they are kept separate at all times.

The mice are described as good-natured and unusually intelligent. They have already learned to hide their tails under their bellies if a human hand pops into their cage, thus making it difficult to pick them up by the tail, the usual method.

Since their hair is black, the greying effects of cosmic radiation in outer space will be visible when the first mice are successfully recovered from orbit, Mr. Dickey explained.

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GENERAL SCIENCE

Animal Study Adds To Man's Self-Knowledge

ANTS, MONKEYS and jackdaws can help man get a better picture of how and why he acts the way he does.

Learning from scientists' studies of the other animals is perhaps one of the most important links between the sciences and the humanities. Demonstrating this link is very important for the modern world, Sir James Gray, professor of zoology at the University of Cambridge, pointed out in his address as president of the British Association for the Advancement of Science meeting in York, England.

For example, Sir James said, there is the ant which he described as nature's first experiment in the social animal. Ant societies are characterized by a totalitarian basis, high levels of cooperation and an extreme aggressiveness toward different or strange individuals or groups. These societies illustrate how not to deal with international problems, Sir James said.

The hierarchy or grading within human society is also comparable with the feeding priority among a flock of jackdaws, for a second example of man's relatedness to other animals. A third example is the young chimpanzee's ability to learn, compared with man's ability.

In a very real sense, it is possible to view man and human society through "biological spectacles," Sir James said. Much can be learned if the individual and society will pay attention to the biological illustrations.

"It is easy to say that science should be welded to the humanities, but much less easy to suggest how this should be done," the British biologist said.

Education and a "plea for a wider outlook in the teaching of science" is one way this can be achieved, Sir James said. Good general practitioners in the art of education are urgently needed. The problem of whether to give the student a general overall view of the sciences and the "whole field of knowledge" or to let him specialize needs to be resolved, Sir James said. One solution may be to have the student survey this whole field of knowledge as a coherent picture before he undertakes specialized training.

"Science can only play its full part in furthering the welfare of mankind if it is used at a very early stage of education, as a means of encouraging a dispassionate but optimistic attitude towards all aspects of human affairs," Sir James concluded.

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WOMAN AND MOUSE—SCIENCE SERVICE *medical writer Helen Buechl (Leavitt) holds one of the small black mice being studied. The electronic device on its back will transmit vital body data to recorders.*

ASTRONOMY

Galaxy Appearing to Be Formed Is Discovered

A NEW GALAXY that appears to be in the process of formation has been discovered.

If the galaxy is not forming in the wake of an older system, then the system may represent the wreckage left after the collision of two galaxies. Galaxies are giant aggregations of billions of stars like the Milky Way in which the sun and its planets, including earth, are located. The universe contains uncounted millions of galaxies.

Drs. E. Margaret and G. R. Burbidge, a husband and wife astronomical team now working at the Yerkes and McDonald Observatories of the University of Chicago, found the "remarkable extragalactic system" on plates taken with the 82-inch telescope at Fort Davis, Texas. The system consists of a number of large patches of light, all embedded in a luminous haze.

They suggest the two possible explanations of its nature in the *Astrophysical Journal* (July).

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